AMENDMENTS TO THE CLAIMS

1-74. (canceled)

75. (previously presented): A proton-conducting membrane designed to serve as an electrolyte in a fuel cell, which membrane consists essentially of

a single metal or metal hydride support, wherein

one or both faces of said support is coated with an electronically-insulating proton-conducting coating, which coating consists of an inorganic material that contains no liquid phase, said coating having a thickness such that the area-specific resistance for protons is in the range of 0.01-100 $\Omega.cm^2$ at at least one temperature between 220°C and 550°C.

76. (currently amended): The ~~component~~ membrane of claim 75, wherein the metal or the metal contained in the metal hydride is palladium, titanium, silver, copper, vanadium, lanthanum, nickel, iron, chromium or alloys thereof.

77. (currently amended): The ~~component~~ membrane of claim 76, wherein the metal or metal in the metal hydride is selected from the group consisting of Pd, PdAg, PdCu, Ti, $LaNi_5$, TiFe and CrV_2, V/Ni/Ti, V/Ni and V/Ti.

78. (currently amended): The ~~component~~ membrane of claim 75, wherein the ~~EIPC~~ electronically-insulating proton-conducting coating is selected from the group consisting of:

mesoporous zirconium phosphate pyrophosphate, $Zr(P_2O_7)_{0.81}$;

$Ba_3Ca_{1.18}Nb_{1.82}O_{8.73}$-$H_2O$;

$Cs_5H_3(SO_4)_4.0.5H_2O$;

a hydrate of $SnCl_2$;

silver iodide tetratungstate $Ag_{26}I_{18}W_4O_{16}$;

KH_2PO_4;

tetraammonium dihydrogen triselenate, $(NH_4)_4H_2(SeO_4)_3$;

$CsDSO_4$;

CsH_2PO_4;

$Sr[Zr_{0.9}Y_{0.1}]O_{3-\delta}$;

a silica-polyphosphate composite containing ammonium ions;

$La_{0.9}Sr_{0.1}Sc_{0.9}Mg_{0.1}O_3$; and

$BaCe_{0.9-x}Zr_xM_{0.1}O_{3-\delta}$ where M is Gd or Nd and x = 0 to 0.4.

79. (currently amended): The ~~component~~ membrane of claim 75, wherein the electronically-insulating proton-conducting coating consists of

$Ba_3Ca_{1.18}Nb_{1.82}O_{8.73}$-$H_2O$;

CsH_2PO_4;

$Sr[Zr_{0.9}Y_{0.1}]O_{3-\delta}$;

polyphosphate composite containing19.96 wt% NH_4^+, 29.3 wt% P, 1.51 wt% Si;

$La_{0.9}Sr_{0.1}Sc_{0.9}Mg_{0.1}O_3$; or

$BaCe_{0.9-x}Zr_xM_{0.1}O_{3-\delta}$ where M is Gd or Nd and x = 0 to 0.4.

80. (currently amended): The ~~component~~ membrane of claim 75, wherein the thickness of the metal or metal hydride is 5-1,000 μm.

81. (currently amended): The ~~component~~ membrane of claim 80, wherein the thickness of the metal or metal hydride is 10-200 μm.

82. (currently amended): The ~~component~~ membrane of claim 75, wherein the area-specific resistance for protons at at least one temperature between 220°C and 550°C is about 0.150 $\Omega.cm^2$.

83. (canceled)

84. (previously presented): A proton-conducting membrane designed to serve as an electrolyte in a fuel cell, which membrane consists essentially of

a single metal or metal hydride support, wherein

one or both faces of said support is coated with an electronically-insulating proton-conducting coating, which coating consists of an inorganic material that contains no liquid phase, said coating having a thickness such that the ASR for protons at at least one temperature between 220°C and 550°C is in the range shown for Nafion® 117 in Figure 10:

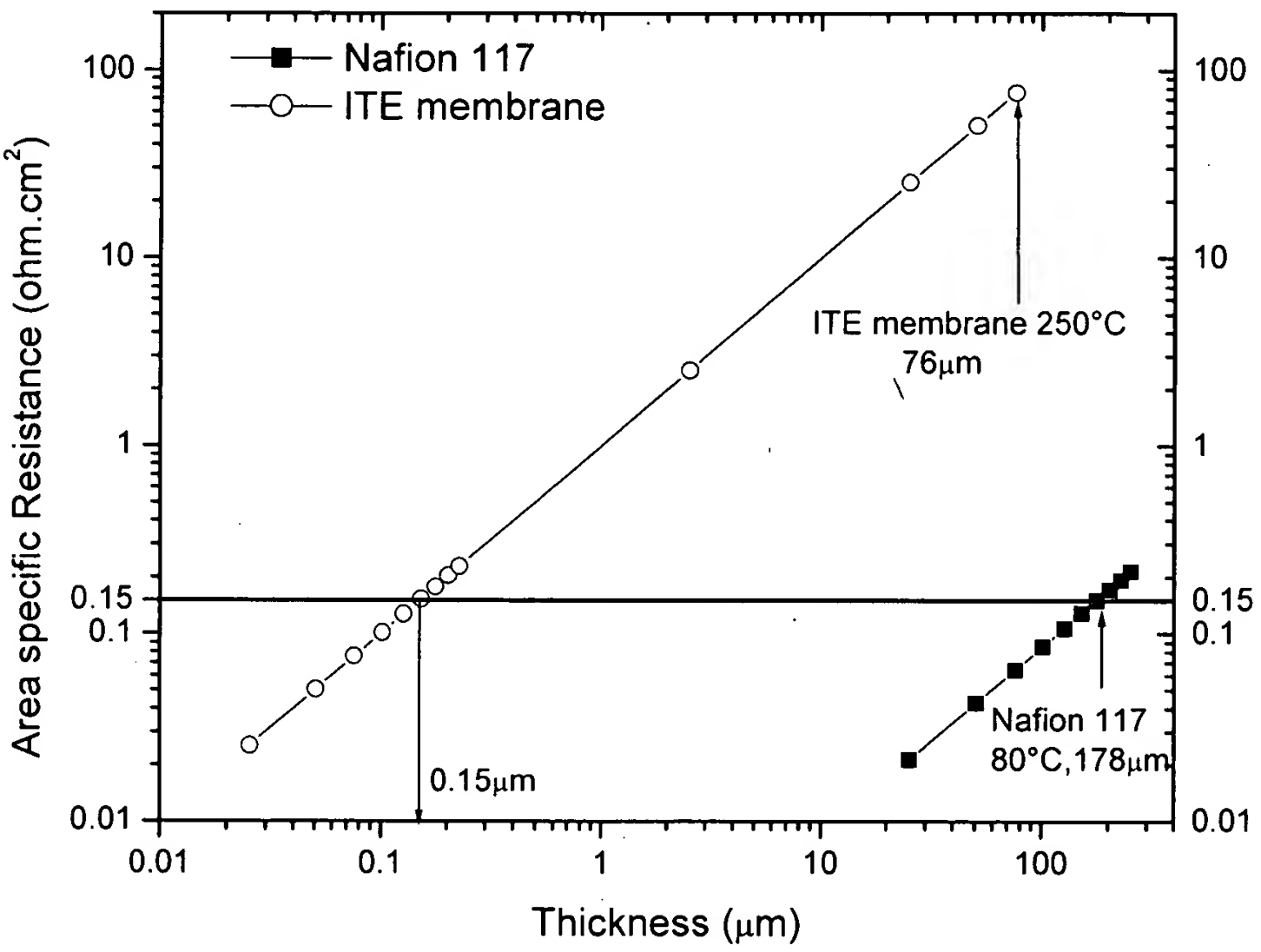

Figure 10.

85. (currently amended): The ~~component~~ membrane of claim 84, wherein the metal or the metal contained in the metal hydride is palladium, titanium, silver, copper, vanadium, lanthanum, nickel, iron, chromium or alloys thereof.

86. (currently amended): The ~~component~~ membrane of claim 85, wherein the metal or metal in the metal hydride is selected from the group consisting of Pd, PdAg, PdCu, Ti, $LaNi_5$, TiFe and CrV_2, V/Ni/Ti, V/Ni and V/Ti.

87. (currently amended): The ~~component~~ membrane of claim 84, wherein the electronically-insulating proton-conducting coating is selected from the group consisting of:

mesoporous zirconium phosphate pyrophosphate, $Zr(P_2O_7)_{0.81}$;

$Ba_3Ca_{1.18}Nb_{1.82}O_{8.73}$-$H_2O$;

$Cs_5H_3(SO_4)_4.0.5H_2O$;

a hydrate of $SnCl_2$;

silver iodide tetratungstate $Ag_{26}I_{18}W_4O_{16}$;

KH_2PO_4;

tetraammonium dihydrogen triselenate, $(NH_4)_4H_2(SeO_4)_3$;

$CsDSO_4$;

CsH_2PO_4;

$Sr[Zr_{0.9}Y_{0.1}]O_{3-\delta}$;

a silica-polyphosphate composite containing ammonium ions;

$La_{0.9}Sr_{0.1}Sc_{0.9}Mg_{0.1}O_3$; and

$BaCe_{0.9-x}Zr_xM_{0.1}O_{3-\delta}$ where M is Gd or Nd and x = 0 to 0.4.

88. (currently amended): The ~~component~~ membrane of claim 84, wherein the electronically-insulating proton-conducting coating consists of

$Ba_3Ca_{1.18}Nb_{1.82}O_{8.73}$-$H_2O$;

CsH_2PO_4;

$Sr[Zr_{0.9}Y_{0.1}]O_{3-\delta}$;

polyphosphate composite containing19.96 wt% NH_4^+, 29.3 wt% P, 1.51 wt% Si;

$La_{0.9}Sr_{0.1}Sc_{0.9}Mg_{0.1}O_3$; or

$BaCe_{0.9-x}Zr_xM_{0.1}O_{3-\delta}$ where M is Gd or Nd and x = 0 to 0.4.

89. (currently amended): The ~~component~~ membrane of claim 84, wherein the thickness of the metal or metal hydride is 5-1,000 μm.

90. (currently amended): The ~~component~~ membrane of claim 89, wherein the thickness of the metal or metal hydride is 10-200 μm.

91. (currently amended): The ~~component~~ membrane of claim 84, wherein the area-specific resistance for protons at at least one temperature between 220°C and 550°C is about 0.150 $\Omega.cm^2$.

92. (canceled)